

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
White Sands Test Facility
P.O. Box 20
Las Cruces, NM 88004-0020



April 7, 2016

Reply to Attn of: RE-16-056

Mr. John E. Kieling, Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Subject: WSTF Monthly Environmental Activity Report for March 2016

Enclosed is the WSTF Monthly Environmental Activity Report for March 2016. This reporting format includes an Executive Summary that provides important events/observations as Enclosure 1, a paper copy of the report as Enclosure 2, and a CD-ROM with the report in PDF as Enclosure 3.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments concerning this submittal, please contact me at 575-524-5024.

A handwritten signature in black ink, appearing to read "T. J. Davis".

Timothy J. Davis
Chief, Environmental Office

3 Enclosures

cc:

Mr. Gabriel Acevedo
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in March 2016:

- NASA began developing a response to NMED's March 8, 2016 Notice of Violation resulting from the January 25, 2016 compliance evaluation inspection.
- NASA completed shipments of hazardous and universal waste in March 2016.
- NASA performed sampling at 35 of 35 groundwater monitoring wells scheduled for March 2016.
- The Mid-plume Interception and Treatment System operated on 29 of 31 days in March 2016 and treated 1.62 acre-feet of contaminated groundwater.
- The Plume Front Treatment System did not operate in March 2016. NASA continued efforts to resolve the electrical power imbalance situation that has prevented operation of the PFTS since December 26, 2015.
- NASA continued fieldwork associated with the investigation and closure of the WSTF wastewater lagoons (SWMUs 2, 8, and 34 and AOC 51).
- NASA submitted a status update on the accelerated corrective measures of three closed small arms firing ranges (SWMUs 29-31).
- NASA continued the investigation and removal of additional WSTF septic tanks (SWMUs 21-27).
- NASA continued project planning activities for the upcoming investigation of the hazardous waste transmission line (SWMU 10) and initiated planning of the 400 Area Closure investigation in accordance with the NMED-approved work plan.
- NASA continued development of the investigation work plan and historical information summary for the TDRSS diesel release (SWMU 50).
- Post-introduction sampling required for the 200/600 Area and MPCA groundwater dye tracer test was performed and samples were submitted to the off-site laboratory for analysis.
- NASA extracted 205 gallons of perched contaminated groundwater from monitoring well 600-G-138 in March 2016 and initiated development of a work plan to further investigate perched groundwater in the 600 Area.
- NASA continued an ongoing project to reconfigure several Westbay groundwater monitoring wells with purgeable sampling systems.
- NASA submitted a variety of documents to NMED in March 2016, including the status update for the firing ranges, Westbay well reconfiguration report and work plan, a summary of waste placed into WSTF's permitted treatment unit, a renewal and modification application for DP-1255, and abandonment forms for three removed septic tanks.
- There were no reportable non-compliance issues in March 2016.



National Aeronautics and
Space Administration

Monthly Environmental Activity Report

March 2016

Submitted April 14, 2016

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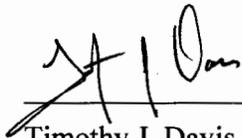
NASA Johnson Space Center White Sands Test Facility

12600 NASA Road Las Cruces, New Mexico 88012

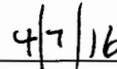
NASA Johnson Space Center White Sands Test Facility Monthly Environmental Activity Report

March 2016

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Timothy J. Davis
Chief, Environmental Office



Date

Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in March 2016:

- NASA began developing a response to NMED's March 8, 2016 Notice of Violation resulting from the January 25, 2016 compliance evaluation inspection.
- NASA completed shipments of hazardous and universal waste in March 2016.
- NASA performed sampling at 35 of 35 groundwater monitoring wells scheduled for March 2016.
- The Mid-plume Interception and Treatment System operated on 29 of 31 days in March 2016 and treated 1.62 acre-feet of contaminated groundwater.
- The Plume Front Treatment System did not operate in March 2016. NASA continued efforts to resolve the electrical power imbalance situation that has prevented operation of the PFTS since December 26, 2015.
- NASA continued fieldwork associated with the investigation and closure of the WSTF wastewater lagoons (SWMUs 2, 8, and 34 and AOC 51).
- NASA submitted a status update on the accelerated corrective measures of three closed small arms firing ranges (SWMUs 29-31).
- NASA continued the investigation and removal of additional WSTF septic tanks (SWMUs 21-27).
- NASA continued project planning activities for the upcoming investigation of the hazardous waste transmission line (SWMU 10) and initiated planning of the 400 Area Closure investigation in accordance with the NMED-approved work plan.
- NASA continued development of the investigation work plan and historical information summary for the TDRSS diesel release (SWMU 50).
- Post-introduction sampling required for the 200/600 Area and MPCA groundwater dye tracer test was performed and samples were submitted to the off-site laboratory for analysis.
- NASA extracted 205 gallons of perched contaminated groundwater from monitoring well 600-G-138 in March 2016 and initiated development of a work plan to further investigate perched groundwater in the 600 Area.
- NASA continued an ongoing project to reconfigure several Westbay groundwater monitoring wells with purgeable sampling systems.
- NASA submitted a variety of documents to NMED in March 2016, including the status update for the firing ranges, Westbay well reconfiguration report and work plan, a summary of waste placed into WSTF's permitted treatment unit, a renewal and modification application for DP-1255, and abandonment forms for three removed septic tanks.
- There were no reportable non-compliance issues in March 2016.

1.0 Waste Management Activities

- 1.1 NMED performed a compliance evaluation inspection of WSTF on January 25, 2016, during which several potential waste management issues were observed. Following the inspection, NASA was provided with the Hazardous Waste Compliance Evaluation Report on January 27, 2016. NASA provided a response to that report on February 11, 2016. The official Notice of Violation, dated March 8, 2016, was received by NASA on March 14, 2016. NASA is developing the required response to address the five violations identified in the Notice of Violation.
- 1.2 NASA completed a shipment of hazardous waste to Veolia in Henderson, Colorado on March 19, 2016. The shipment consisted of 14 containers with 1,250 kilograms of hazardous waste for disposal.
- 1.3 NASA completed a shipment of P078 ADGAS treatment residual (water) waste to Veolia in Henderson, Colorado on March 19, 2016. The shipment consisted of one intermediate bulk container with 1,140 kilograms of hazardous waste for disposal.
- 1.4 NASA completed a shipment of universal waste batteries to the Big Green Box in Anaheim, California on March 29, 2016. The shipment consisted of four containers with 58 kilograms of waste batteries to be recycled.

2.0 Environmental Monitoring

- 2.1 NASA performed sampling at 35 of 35 groundwater monitoring wells or zones scheduled for sampling in March 2016, including six monitoring wells or zones sampled for semi-annual landfill post-closure care groundwater detection monitoring.
- 2.2 Other regulatory groundwater sampling requirements (such as those included in the Remediation System Monitoring Plan and discharge plans) were performed as scheduled. Plume Front Treatment System influent, effluent, and extraction wells were not sampled in March 2016 because the system was not operational (see next section).

3.0 Corrective Actions/Investigations

- 3.1 Groundwater Treatment Systems
 - The Mid-plume Interception and Treatment System (MPITS) and the Plume Front Treatment System (PFTS) shut down automatically on December 26, 2015 because of an interruption in the electrical power supply following an off-site event during a winter storm. The MPITS was restarted on December 28, 2015 and operated until January 23, 2016, when it shut down automatically because of a leak detection alarm. The PFTS was not restarted in December 2015 because scheduled maintenance was initiated following the unexpected shutdown on December 26, 2015. While performing this scheduled maintenance, NASA determined that the electrical power supply provided by an off-site generator was out of phase by greater than 2%. This condition created electrical current unbalances outside of National Electrical Manufacturers Association standards and greater than the PFE well pump motor protection devices allow. Operating the PFE well pump motors under these conditions would result in premature failure, with an expected operational life of approximately 50% of that expected. After evaluating the risks associated with operating groundwater treatment system motors, NASA determined not to restart the systems without fully understanding the potential ramifications. The PFTS has not been restarted since the December 2015 shutdown.
 - Subsequent testing showed that the smaller pump motors used in the MPE wells are less susceptible to damage resulting from operating with unbalanced current. The MPITS was restarted on March 1, 2016 and was monitored closely throughout March 2016 for signs of unexpected damage resulting from unbalanced electrical current. Although the phase imbalance

was observed at the MPITS, the shunt trip protector and higher service factor motors of the MPITS allowed the system to operate without pump or motor failures.

- During March 2016 NASA continued to work closely with the off-site electrical power generator to determine the cause of the phase shift issues and to investigate potential methods for eliminating or reducing the electrical current unbalance to acceptable levels. NASA invested significant time and effort to support the off-site provider in their investigation, which resulted in the identification of an issue with a transformer at one of the substations that provides power to WSTF. NASA and the off-site electrical power supplier coordinated a site-wide electrical power outage on April 2, 2016 to more fully investigate the problem with the transformer. With the substation off-line, the electrical power supplier determined that a fuse was burned out in one of the transformers in the substation, resulting in a voltage induction that created the phase shift. The damaged fuse was replaced during the outage, which appears to have corrected the current unbalance observed at WSTF.

3.2 Mid-plume Interception and Treatment System

- MPITS Operation – The MPITS operated on 29 of 31 days in March 2016 and treated approximately 1.62 acre-feet of groundwater and 419 gallons of IDW. All treated water was discharged to the infiltration basin.
- MPITS Shutdowns, Repairs, and Modifications – There were three unplanned and four planned shutdowns of the MPITS in March 2016. On March 2, 2016 the system was shut down in order to test the HMI stop control and to adjust internal settings. The system was restarted on March 3, 2016. On March 6, 2016 the system shut down automatically because of a leak detection alarm. The alarm was automatically cleared by the system, which was restarted on March 7, 2016. On March 13, 2016 the system shut down automatically after an unexpected shunt trip opening. The system was restarted on March 14, 2016. On March 17, 2016 the system was shut down in order to perform another test of the HMI stop control and to adjust operational settings. The system was restarted later that day. On March 19, 2016 the system shut down automatically because of a leak detection alarm. The alarm was automatically cleared by the system, which was restarted on March 21, 2016. There were two additional planned shutdowns on March 22 and 23, 2016, during which UV lamp O-rings were replaced. The system was restarted both days after the repairs were made. In February and March 2016, MPE well headers were reconfigured from 2-inch to 1-inch diameter piping to improve flow control and instrumentation capabilities.

3.3 200 Area Investigation

- In February 2016, NASA completed and submitted the *200 and 600 Area Vapor Intrusion Assessment Work Plan* to NMED (February 25, 2016). NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.

3.4 400 Area

- NASA initiated project planning activities for investigation fieldwork, which will be performed in accordance with the NMED-approved *400 Area Closure Investigation Work Plan* (June 27, 2011).

3.5 600 Area Perched Groundwater Extraction Pilot Test

- NASA continued extracting perched groundwater from monitoring well 600-G-138 in March 2016 in accordance with NMED's March 1, 2013, *Approval Time Extension for Implementation of the Perched Groundwater Extraction Pilot Test at the 600 Area*. Approximately 205 gallons of perched groundwater were removed from 600-G-138 in March 2016.

- NASA initiated development of a work plan to further evaluate perched groundwater in the 600 Area as directed in NMED's February 11, 2016 *Additional Work Plan Requirements to Evaluate Potential Source of 600 Area Contamination*.
- 3.6 SWMUs 1, 3 and 15 (100/600 Area Burn Pit and Container Storage Area)
- The *NASA WSTF SWMUs 1, 3, and 15 (100 Area Burn Pit, 100 Area Container Storage Area, and 600 Area Burn Pit) Investigation Report* (November 23, 2015) remains under NMED review.
- 3.7 SWMUs 2, 8, and 34 and AOC 51 (Wastewater Lagoons)
- NASA continued transferring wastewater from the 100 Area lagoons to the 600 Area lagoons in order to more rapidly dry the 100 Area sludge and allow for the collection of fully representative sludge samples. Approximately 500,000 gallons of wastewater have been transferred.
 - NASA is also evaluating a pumping system to transfer wastewater from the 200 Area lagoons to the 600 Area lagoons.
- 3.8 SWMU 10 (200 Area Hazardous Waste Transmission Line)
- NASA continued project planning activities for investigation fieldwork in accordance with the *200 Area HWTL (SWMU 10) Investigation Work Plan and Historical Information Summary* (July 29, 2015).
 - NASA expects to initiate investigation fieldwork in May 2016.
- 3.9 SWMU 16 (600 Area BLM Off-site Soil Pile)
- The *SWMU 16 (600 Area BLM Off-Site Soil Pile) Investigation Report* was submitted to NMED on February 25, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.
 - Soil cuttings generated during the investigation were disposed of at a solid waste landfill in accordance with NMED's February 24, 2016 approval of NASA's *Request for "Contained-in" Determination for SWMU 16 Investigation-Derived Waste (IDW)* (February 4, 2016).
- 3.10 SWMU 19 (800 Area Below Grade Storage Tank)
- The *SWMU 19 (800 Area Below Grade Storage Tank) Investigation Report* was submitted to NMED on February 17, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.
 - Soil cuttings generated during the investigation were disposed of at a solid waste landfill in accordance with NMED's February 11, 2016 approval of NASA's *Request for a "Contained-in" Determination for SWMU 19 Investigation-Derived Waste (IDW)* (January 21, 2016).
- 3.11 SWMUs 21-27 (Septic Tanks)
- NASA removed the 300 Area and 400 Area main septic tanks in March 2016. The two tanks were demolished in place and the concrete debris was disposed of at the White Sands Missile Range solid waste landfill.
 - NASA continues to plan for the removal of several more septic tanks and the investigation of the SWMU 22 tank location, which will be performed after non-SWMU tanks are removed. NASA continues planning for the collection of soil samples from inside the SWMU 22 tank.

3.12 SWMUs 29-31 (Small Arms Firing Ranges)

- Utilizing chemical and field screening data, NASA prepared updated maps of the firing ranges in accordance with the *Small Arms Firing Ranges (SWMUs 29 – 31) Accelerated Corrective Measures Work Plan* (February 26, 2015). The updated maps, which provide additional delineation of the horizontal extent of the firing range study areas, were submitted to NMED on March 8, 2016.
- The March 8, 2016 submittal also included a proposal for a revised firing range cleanup strategy. NMED input was requested prior to further cleanup efforts at the firing ranges.

3.13 SWMU 50 (TDRSS Diesel Release)

- NASA continued development of the investigation work plan and historical information summary for SWMU 50. These documents are due to NMED by June 30, 2016.

3.14 Groundwater Dye Tracer Test

- NASA continued a groundwater dye tracer test in accordance with the NMED-approved *Work Plan for Tracer Testing in the 200/600 Areas and Mid-plume Constriction Area* (May 10, 2012). Four fluorescent dyes were introduced at four locations (two in the 200 Area and two in the Mid-plume area) in June 2014, and post-introduction groundwater monitoring continued through March 2016 in accordance with the plan.
- Groundwater tracer samples have been regularly collected since dye introduction and submitted to the off-site contracted analytical laboratory as described in the work plan. Data are being received and reviewed by NASA project personnel. Rhodamine WT, which was introduced in monitoring well BLM-14-327, has been detected at three monitoring wells in the Mid-plume area. Eosine, which was introduced in monitoring well BLM-15-305, has been detected at three different monitoring wells to the southwest of the Mid-plume area and in one location to the northwest of the Mid-plume area. To date, there have been no confirmed detections of the tracer dyes released in the 200 Area.

3.15 Westbay Monitoring Well Reconfiguration

- NASA developed an abbreviated work plan for the reconfiguration of Westbay monitoring wells JER-1, JER-2, and ST-7. The work plan was submitted to NMED on March 8, 2016.
- NASA completed and submitted to NMED Westbay Well Reconfiguration Reports for recently converted Westbay monitoring wells BLM-32, WW-4, and WW-5.
- Routine sampling of recently reconfigured Westbay wells BLM-32, WW-4, and WW-5 continues in accordance with the approved Groundwater Monitoring Plan. No significant issues have been encountered to date.
- NASA continues efforts to reconfigure previous Westbay monitoring well BLM-28. After a significant delay, the off-site vendor responsible for the construction of the dedicated low-flow bladder pump system (with packer) delivered the sampling system in late January 2016. The system was inspected and prepared for installation. However, attempts to install the system were unsuccessful. The partially installed sampling system was removed from borehole in March 2016 and it was determined that the inflatable packer supplied with the system is too large in diameter for installation in the open borehole. Alternate downhole equipment is required to complete the reconfiguration of this well.

3.16 Installation of New Monitoring Well PL-11

- NASA submitted the *Drilling Work Plan for Supplement Groundwater Monitoring Well (PL-11)* on February 10, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.
- NMED approved the work plan on March 23, 2016. NASA initiated planning and procurement activities for well drilling and installation work.

4.0 Non-compliance Issues

The NASA Hazardous Waste Permit requires that other non-compliance conditions be reported to NMED. There were no instances of other non-compliance during this reporting period that require notification under the Permit. The criteria for non-compliance reporting in this report (as defined by 40 CFR 270.30 (l)(10) and EPA interpretations at RCRA Faxbacks 13142 and 13686) would be any non-compliance with permit conditions that is not classified as minor recordkeeping, reporting, and similar oversights that were corrected once discovered. Additionally, there were no issues meeting the previously defined criteria (minor items immediately corrected) that were part of a repeating pattern of non-compliance.

5.0 Documents Submitted

5.1 Documents submitted to the Hazardous Waste Bureau in March 2016.

- NASA submitted the *Status Update for NASA WSTF Small Arms Firing Ranges (SWMUs 29-31) Accelerated Corrective Measures* on March 8, 2016.
- NASA submitted the *Westbay Well Reconfiguration Work Plan for Wells JER-1, JER-2, and ST-7* on March 8, 2016.
- NASA submitted the *2015 Annual Waste Summary Report for Waste Placed into the Permitted Treatment Unit at the NASA White Sands Test Facility (WSTF)* on March 10, 2016.
- NASA submitted the *Well Reconfiguration Reports for Wells BLM-32, WW-4, and WW-5* on March 30, 2016.

5.2 Pertinent Documents submitted to other NMED Bureaus in March 2016.

- NASA submitted the *Discharge Permit Renewal and Modification Application for Discharge Plan (DP)-1255* to the Groundwater Pollution Prevention Section of the Groundwater Quality Bureau on March 29, 2016.
- NASA submitted the *On-Site Liquid Waste Abandonment Forms for Septic Tanks Near WSTF Buildings 320, 447, and 650* to the Liquid Waste Program on March 30, 2016.

5.3 Status of documents submitted in previous months

- NASA submitted the *SWMUs 1, 3, and 15 (100 Area Burn Pit, 100 Area Container Storage Area, and 600 Are Burn Pit) Investigation Report* on November 23, 2015. NASA received NMED's January 6, 2016 Fee Assessment for review of the report and submitted the \$9,500 review fee payment on February 8, 2016.
- NASA submitted the *Drilling Work Plan for Supplement Groundwater Monitoring Well (PL-11)* on February 10, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment. NMED approved the work plan on March 23, 2016.

NASA White Sands Test Facility

- NASA submitted the *Hazardous Waste Compliance Evaluation Report Response* on February 11, 2016. NASA received NMED's March 8, 2016 *Notice of Violation* and is developing the formal response.
- NASA submitted the *SWMU 19 (800 Area Below Grade Storage Tank) Investigation Report* on February 17, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.
- NASA submitted the *SWMU 16 (600 Area BLM Off-Site Soil Pile) Investigation Report* on February 25, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.
- NASA submitted the *200 and 600 Area Vapor Intrusion Assessment Work Plan* on February 25, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is processing the request for payment.

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MR. GABRIEL AVEVEDO
 HAZARDOUS WASTE BUREAU
 New Mexico Environmental Dept.
 2905 Rodeo Park Drive East Building 1
 Santa Fe, NM 87505

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